Office of Data Services and Technology

# Spatial Data Infrastructure


## Welcome

# Spatial Data Infrastructure

## *Presentation Overview:*

- Caltrans GIS background
- GIS Technology Trends
- Caltrans Geospatial Data Clearinghouse and Spatial Data Infrastructure Pilot

## *Transportation GIS: built on the premise of*

- Good transportation decision making requiring spatial reasoning
- Accurate geographical information supports spatial reasoning
- Collecting, integrating, analyzing, and sharing of geographical information requires current GIS tools

# Spatial Data Infrastructure

## *Brief synopsis of GIS/Geospatial information at Caltrans:*

- 1990s - Early adoption of digital technologies (very challenging)
- 2000s – Desktop GIS is common (but still challenging)
- 2010s – WebGIS starts to emerge (less challenging…)

# *Today's App Economy:*

- Web driven technologies
- Technology trade-offs – Complex vs. Simple Apps
- Web connected mobile devices

# *The Future Caltrans Geospatial App Economy:*

- Geospatial Centric Apps (Web and Mobile)
- Web Map Services (published content)
- Standardized Data Sources (e.g. Data Domains)

# Spatial Data Infrastructure

***Caltrans Geospatial Data Clearinghouse and Spatial Data Infrastructure Pilot***

***Primary Objective:***

Pilot deployment of a geospatial platform of engagement for Caltrans and it's transportation partners that will support transportation decision making and collaboration

# Spatial Data Infrastructure

## *Key Project Participants:*

- Sponsorship
- ESRI EEAP Team
- IT Oversight
- IT Technical Team
- Platform Test Team (Users)

# Spatial Data Infrastructure

## *High-Level Business Needs:*

- Enabling of Web based collaboration
- Establishing authoritative open GIS data sources
- Enabling geospatial data discovery
- Enhancing geospatial accessibility to apps and maps

# Spatial Data Infrastructure

## *Platform Requirements:*

- Enables Geospatial data discovery and collaboration
- Development and implementation of the scalable base architecture on the Caltrans network
- Provide commonly used desktop, server, cloud, and mobile mapping tools and application program interfaces (APIs)

# Spatial Data Infrastructure

## *Project Benefits and Outcomes:*

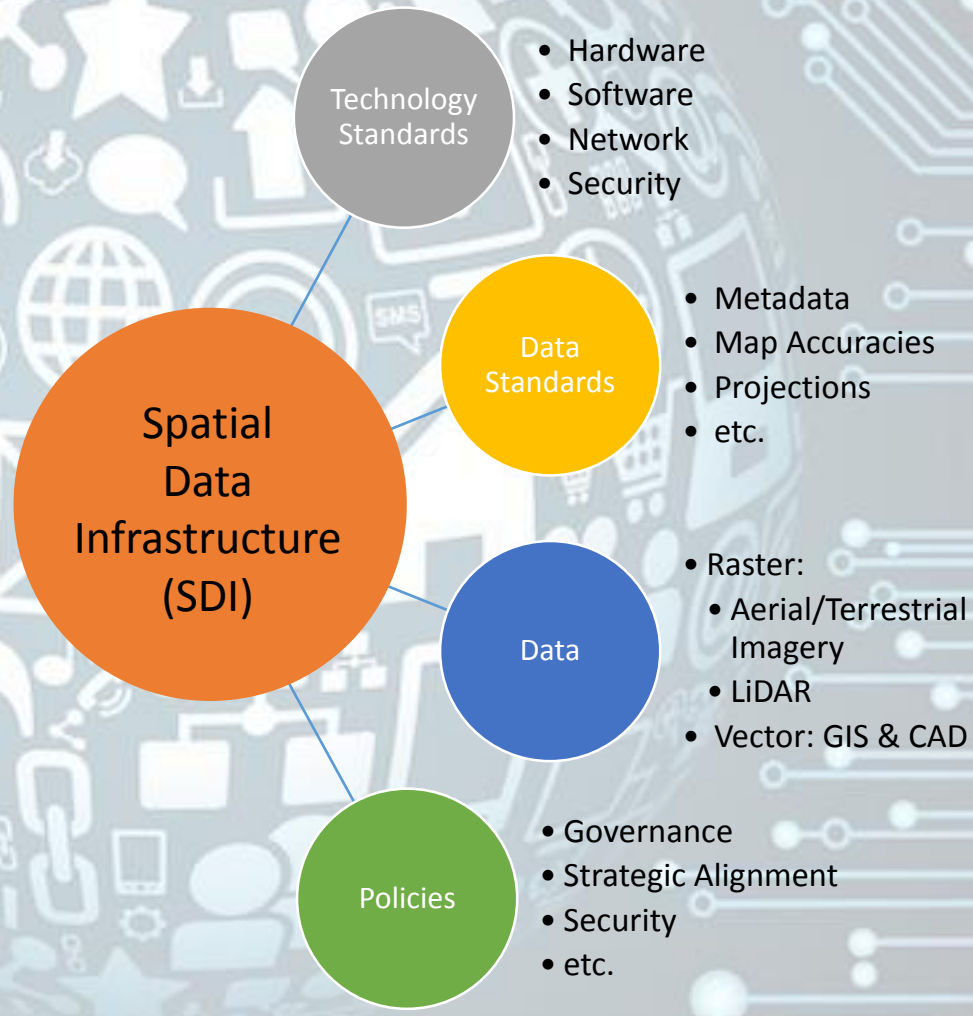
- Enabling Caltrans to efficiently create, manage, and share geospatial transportation data
- Promote best practices for Web and enterprise GIS technology

# *Project Benefits and Outcomes:*

- A single Web and enterprise GIS technology platform
- Efficient use of Caltrans resources
- System Stability and Supportability
- Provides Focus and Specialization
- Provides Scalability
- Minimizes complexity in IT Project Concepts

# Spatial Data Infrastructure

## Organizational Components



# *Web Maps and Applications:*

- ArcGIS Online – Caltrans Organizational Site
- Caltrans Portal for ArcGIS Server – Portal Gallery

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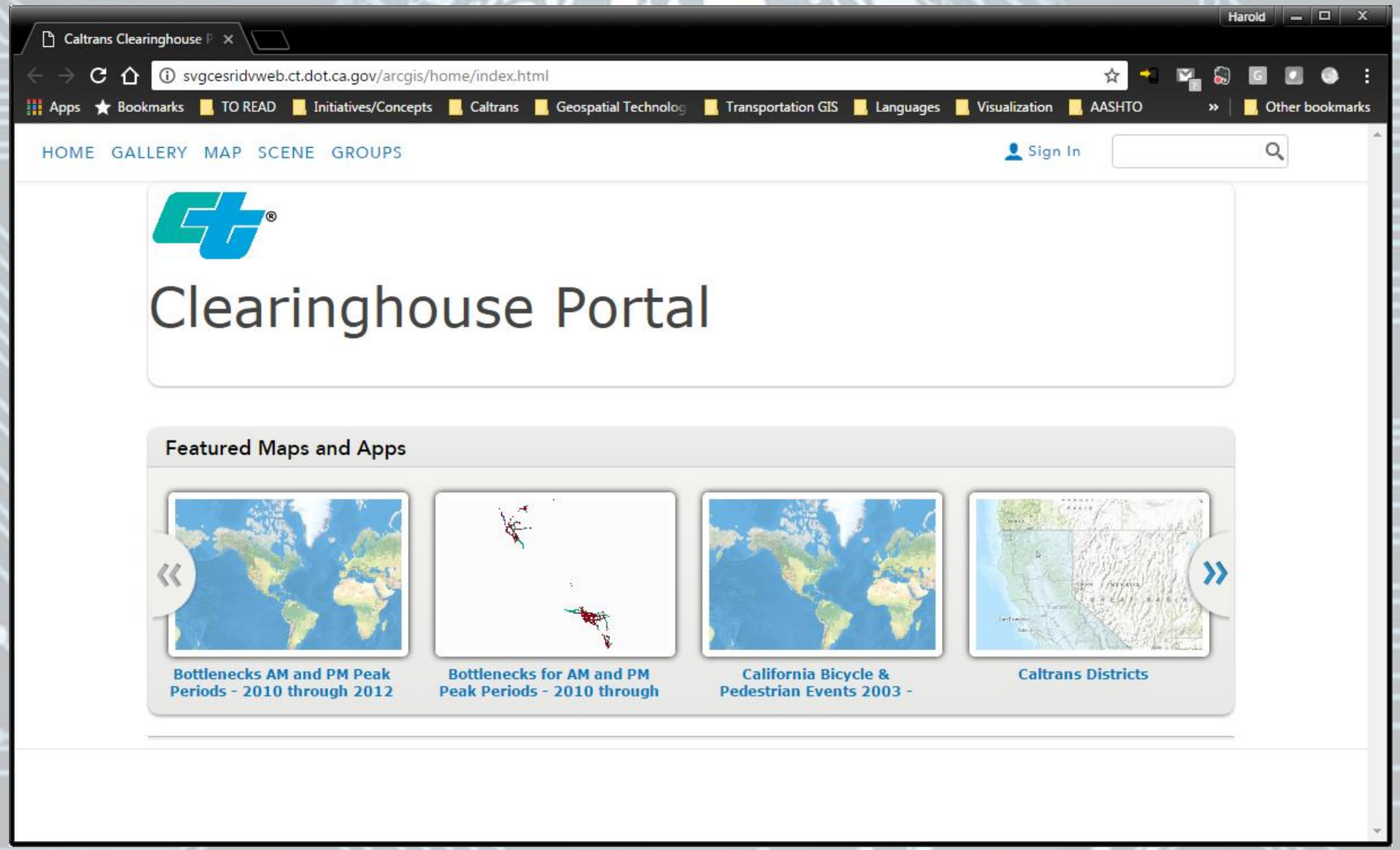
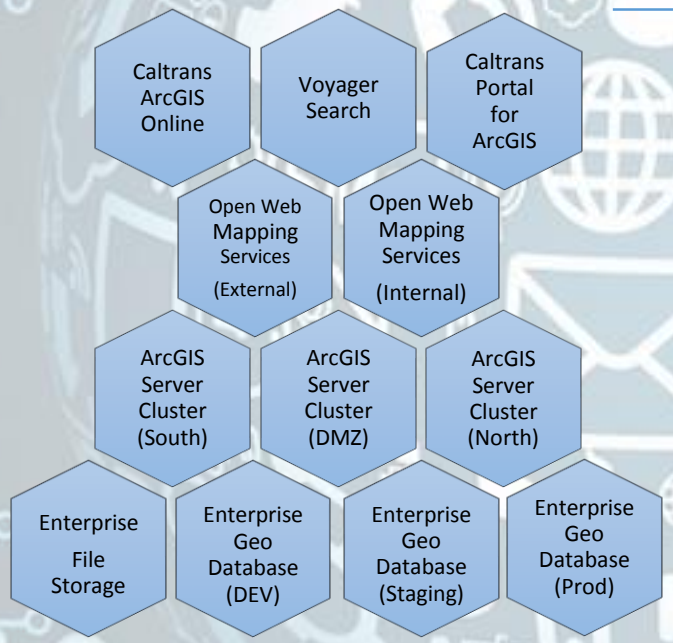


# *Enterprise GIS Technology Overview:*

- ArcGIS Online and Portal for ArcGIS
- ArcGIS Server
- Enterprise Geodatabase (Oracle)
- Storage:
  - VNX for structured databases
  - Isilon for high-performance file based storage
- Voyager Search
- Feature Manipulation Engine Server (FME Server)

# Spatial Data Infrastructure

## Caltrans SDI Technology Components




Presentation Tier

Web Services Tier

Application Tier

Data Tier

# Spatial Data Infrastructure

## *Current IT Projects with GIS Components:*

- *Roads & Highways (Integrated Caltrans LRS)*
- *FRED (proposed) – Transportation Project Prioritization*
- *IMMS Upgrade – Base Map and Feature Services*
- *Seed Plant Calculator – WebApp*
- *Trucking QuickMap – Map Feature Services*
- *LD-IGR (Geo Tracking System) – Replacement of Google Base Map*
- *SMILE/POD – Prototyping for an enterprise land survey application*
- *STPI (more on this later…)*

## *Next Steps Post-Pilot Project:*

- Final assessment and lessons learned
- Plan for production deployment based on lessons learned
- Approval for production architecture

# Spatial Data Infrastructure

***Summary:***

- Brief history of GIS at Caltrans
- The technology trends and a future Caltrans GeoApp Economy
- An overview of the Clearinghouse Project and Spatial Data Infrastructure (SDI)

## *Up Next:*

- A look at the STPI Project with Christian Bushong…